



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

October 1, 1998

Dr. Stephan J. Brocoum  
Assistant Manager for Licensing  
U.S. Department of Energy  
Office of Civilian Radioactive Waste Management  
Yucca Mountain Site Characterization Office  
P.O. Box 30307  
North Las Vegas, Nevada 89036-0307

SUBJECT: ISSUE RESOLUTION STATUS REPORT (KEY TECHNICAL ISSUE: THERMAL EFFECTS ON FLOW, REVISION 1)

Dear Dr. Brocoum:

As you know, the staff of the U.S. Nuclear Regulatory Commission (NRC) has developed a program for early resolution of technical issues at the staff level. The previous version of this Issue Resolution Status Report (IRSR) focused on defining acceptance criteria for staff use in reviewing the treatment of thermal effects on flow (TEF) in the U.S. Department of Energy's (DOE's) testing, modeling, and performance assessment program areas (letter dated November 13, 1997, from N.K. Stablein, to S.J. Brocoum). In this revision, DOE's thermohydrologic testing program (Subissue 1) is evaluated in the context of the acceptance criteria.

Consistent with NRC regulations on preclicensing consultations and a 1992 agreement with DOE, staff-level issue resolution can be achieved during the preclicensing consultation period; however, such resolution at the staff level would not preclude the issue being raised and considered during the licensing proceedings. Issue resolution at the staff level during preclicensing is achieved when the staff has no further questions or comments (i.e., open items) at a point in time regarding how the DOE program is addressing an issue. There may be some cases where the resolution at the staff level may be limited to documenting a common understanding regarding differences in NRC and DOE points of view. Further, pertinent additional information could raise new questions or comments regarding a previously resolved issue.

The staff has evaluated DOE's thermohydrologic testing program, in the context of the acceptance criteria for Subissue 1, as provided in Section 5.1 of the enclosure. No specific questions or comments about DOE's thermohydrologic testing program resulted from this evaluation. However, it is important to note that DOE's thermohydrologic testing program is a long-term program. Evaluation of significant technical aspects of TEF such as: (i) coupled thermal processes; (ii) water reflux toward heat sources; and (iii) potential cyclic wetting/drying of WP surfaces requires analysis of longer-term data from DOE's drift-scale test than is currently available. It would be inappropriate to conclude that the staff will have no more questions or comments about thermohydrologic testing in the future. The staff will continue to monitor the progress of thermohydrologic testing at Yucca Mountain and independently analyze available data. Finally, the staff's comments on DOE's Thermohydrology Testing and Modeling

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Program, submitted to DOE prior to development of the acceptance criteria provided in this IRSR (letter dated January 23, 1997, from M.J. Bell, to S.J. Brocoum), are resolved.

We would like to note that we have had very successful interactions with DOE project personnel on the thermohydrologic testing program. We appreciate the opportunity to attend DOE's Quarterly Progress Meetings and will continue to send observers to these meetings to monitor the progress of thermohydrologic testing. This IRSR should help facilitate the exchange of ideas between NRC and DOE, as well as provide DOE with an understanding of the criteria that NRC will be using to evaluate the information presented on this subject in DOE's Total System Performance Assessment-Viability Assessment.

The enclosure should be viewed as a status report that provides the staff's most current views on DOE's thermohydrologic testing program, as related to TEF, at Yucca Mountain. NRC plans to update this report in FY1999 to include evaluation of the treatment of TEF in DOE's modeling and performance assessment program areas. We welcome a dialogue on this subject with DOE, the U.S. Nuclear Waste Technical Review Board, State of Nevada, and other interested parties. If you have any questions about this letter, please contact Jeffrey Pohle of my staff at (301) 415-6703, or via Internet mail service (jap2@nrc.gov).

Sincerely,



Michael J. Bell, Chief  
Engineering and Geosciences Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

cc: See attached list

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(original signed by:)

Michael J. Bell, Chief  
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Letter to S. Brocoum from M. Bell dated: October 1, 1998

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